

File #:M/0491006

Approved: Feb 6 1 2004

Bond adjustment: \$589.500

State Of Utah  
Department of Natural Resources  
Division of Oil, Gas, and Mining  
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### Notice of Intention to Amend Mining Operations

Interpace Industries, Inc. would like to amend an existing mine currently being operated under permit #M/049/006.

File in:

- ☐ Confidential  
☒ Shelf  
☐ Expandable

Refer to Record No 0001 Date 2-6-04  
In Permit# M-4900, 2001, Incenm  
For additional information

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I. RULE R647-4-104 – OPERATOR, SURFACE, AND MINERAL OWNERS

1. Name of Applicant or Company:  
Interpace Industries, Inc.  
a Washington Corporation
2. Permanent Address:  
736 W Harrisville Rd.  
Ogden, UT 84404  
Phone (801)782-7933  
Fax (801)782-5047
3. Company Representative:  
Aaron Hancock  
Director of Mining and Transportation  
736 W Harrisville Rd  
Ogden, UT 84404  
Phone (801)782-7933  
Fax (801)782-5047
4. Mine Name: Clinton Clay Pit
5. Previously Assigned File Number: M/049/006
6. Location of Operations: The NE ¼ of SE ¼ & SE ¼ of NE ¼ of section 8, and the S ½ of NW ¼ & N ½ of SW ¼ & N ½ of SE ¼ & N ½ of SE ¼ of section 9 T5S R1W Utah County
7. Ownership of the land surface:  
All but lot 8  
Private fee  
Interpace Industries, Inc.  
736 W Harrisville Rd.  
Ogden, UT 84404  
  
Lot 8  
Public Domain (BLM)

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8. Owner of record of the minerals to be mined:

All but lot 8  
Private fee  
Interpace Industries, Inc.  
736 W Harrisville Rd.  
Ogden, UT 84404

Lot 8  
Public Domain (BLM)

9. BLM Casefile Serial Number:

Camp Williams Community Pit U-77794

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II. RULE R647-4-105 – MAPS, DRAWINGS, & PHOTOGRAPHS

## 105.1 – Base Map

Base Map Checklist

| Check    |   | Map ID      |
|----------|---|-------------|
| <u>✓</u> | (a) Property Boundaries of surface ownership of all lands which are to be affected by the mining operations;  | <u>BM-1</u> |
| <u>✓</u> | (b) Perennial, intermittent, or ephemeral streams, springs and other bodies of water; roads, buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, existing wells or boreholes, or other existing surface facilities within 500 feet of the proposed mining operations; | <u>BM-2</u> |
| <u>✓</u> | (c) Known areas which have been previously impacted by mining or exploration activities within the proposed land affected;  | <u>BM-3</u> |
| <u>✓</u> | (d) Areas proposed to be disturbed or reclaimed over the life of the project or other suitable time period.   | <u>BM-3</u> |

## 105.2 – Surface Facilities Map

Surface Facilities Map Checklist

| Check    |   | Map ID      |
|----------|---|-------------|
| <u>✓</u> | (a) Proposed surface facilities, including but not limited to: buildings, stationary mining/processing equipment, roads, utilities, power lines, proposed drainage control structures, and the location of topsoil storage areas, overburden/waste dumps, tailings or processed waste facilities, disposal areas for overburden, solid and liquid wastes and wastewater discharge treatment and containment facilities; | <u>SF-1</u> |
| <u>✓</u> | (b) A border clearly outlining the extent of the surface area proposed to be affected by mining operations, and the number of acres proposed to be affected;  | <u>SF-2</u> |
| <u>✓</u> | (c) The location of known test borings, pits, or core holes.  | <u>SF-2</u> |

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## 105.3 – Additional Maps

Reclamation Treatments Map Checklist

Check

Map ID

- ✓ (a) Areas of the site to receive various reclamation treatments shaded, cross hatched or color coded to identify which reclamation treatments will be applied. Areas would include: buildings, stationary mining/processing equipment, roads, utilities, proposed drainage improvements or reconstruction, and sediment control structures, topsoil storage areas, waste dumps, tailings or processes waste facilities, disposal areas for overburden, solid and liquid wastes, ponds, and wastewater discharge, treatment and containment facilities. Reclamation treatments may include ripping, regrading, replacing soil, fertilizing, mulching, broadcast seeding, drill seeding, and hydro seeding;
- ✓ (b) A border clearly outlining the extent of the area to be reclaimed after mining, the number of acres disturbed, and the number of acres proposed for reclamation;
- (c) Areas disturbed by this operation which are included in a request for a variance from the reclamation standards;
- (d) Highwalls which are proposed to remain steeper than 45 degrees and slopes which are to proposed to remain steeper than 3 horizontal : 1 vertical.

RT-1RT-1N/AN/A

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### III. RULE R647-4-106 – OPERATION PLAN

#### 106.1 – Minerals to be mined:

Fireclay

#### 106.2 – Type of operations conducted:

The area proposed for disturbance is divided into two areas: the west area and the east area. The discussion of operations in these two areas will be discussed separately.

The west area. This is an area of historical mining in which new reserves have recently been discovered and deemed to be economically mineable. The area consists of four old clay cuts that were mined out years ago. The new mining area will be the “peninsula” between these old cuts. The operation will be to use a track hoe and mining trucks to remove the clay and waste and transport them to the stockpile pad and waste dump respectively. The equipment will create increasingly lower steps until the clay is no longer usable. This will be to a depth of about 50’ below surface level, or at about the same elevation as the floor of the old pits. The clay will be hauled from the stockpile by belly-dump trucks.

We would like to permit a 70 acre parcel, but only bond for disturbance an area of 25.15 acres. Our plan is to begin mining on the east end of this 70 acres and move in mining advances towards the west, while reclaiming behind the advance as the area is mined out. Amendments to this plan will be filed for each advance.

The east area. This has been an area of recent clay mining, but has now been mainly turned into a sand & gravel pit. The sand and gravel overlay clay deposits that were being followed until the clay became too deep under the aggregate. We will use a track hoe and mining trucks to remove clay and waste and haul them to the stockpile pad and waste dumps, respectively. Waste will be deposited in areas which have been deemed mined out to bring these old cuts to grade. We do not anticipate to mine clay in this area for more than five more years. The gravel operation will consist of using a tracked dozer to push the aggregate materials downhill to a point where a loader will transport the material to a screening/crushing operation where the material will be processed and sold as various materials, eg. e-fill, gravel, road base, etc.... The original purpose of the gravel operation was to remove the aggregate materials from on top of clay deposits, but since more economical deposits have been discovered to the west, the purpose of the crushing operation is to bring the highwalls to the north and south of the old Lehi cut to acceptable slopes for reclamation while making a saleable product. All money generated from royalties from the sand and gravel will be used for reclamation purposes.

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## 106.3 – Estimated Acreage (see maps SF-1 &amp; SF-2)

The west area:*Permitted*

70.0 acres

*Disturbed:*

|  |            |
|--|------------|
| 1. Areas of actual mining:               | 10.0 acres |
| 2. Overburden/waste dumps:               | 4.0 acres  |
| 3. Ore and product stockpiles:           | 2.75 acres |
| 4. Roads:                                |            |
| Upper                                    | 2.05 acres |
| Connecting                               | 0.85 acres |
| Lower                                    | 1.75 acres |
| Total                                    | 4.65 acres |
| 5. Operations area and equipment siting: | n/a        |
| 6. Topsoil pad:                          | 1.0 acres  |
| 7. Previously disturbed & unreclaimed:   | 2.75 acres |

Total disturbed area

25.15 acres

The east area:*Permitted & Disturbed:*

|  |            |
|--|------------|
| 1. Areas of clay mining:                 | 4.65 acres |
| 2. Areas of gravel mining:               | 16.0 acres |
| 3. Overburden/waste dumps:               | 13.0 acres |
| 4. Ore and product stockpiles:           | 11.0 acres |
| 5. Roads:                                | 2.15 acres |
| 6. Operations area and equipment siting: | 0.6 acres  |
| 8. Tailings (sandy loam) disposal area:  | 5.0 acres  |
| 8. Other:                                | 27.6 acres |

Total disturbed area

80.0 acres

**Total Permitted area:****150 acres****Total Disturbed area:****105.15 acres****APPROVED****FEB 06 2004**

## 106.4 – Nature of material including estimated tonnage

The west area:

This area is made up of vertical sequential veins of clay/shales, limestones, and quartzites.

1. Thickness of overburden: 5 feet
2. Thickness of mineral deposit: 60 feet
3. Estimated annual volume of overburden: 500 cy
4. Estimated annual volume of waste: 100,000 cy
5. Estimated annual volume of ore mined: 20,000 cy
6. Overburden/waste description:

The overburden is the topmost 5 feet of material which is comprised of clays, limestones, and quartzites. The clays are unusable since the top 5 feet has deposits of  $\text{CaCO}_3$ . The waste is comprised of unusable clays, shales, limestones, and quartzites.

The east area:

This area is made up of vertical sequential veins of clay/shales, limestones, and quartzites overlain by horizontal deposit of silts, sands, and gravels ranging in size from sand to large cobbles to boulders.

1. Thickness of overburden: 0 feet
2. Thickness of mineral deposit: 100 feet
3. Estimated annual volume of overburden: 0 cy
4. Estimated annual volume of waste: 135,000 cy
5. Estimated annual volume of ore mined: 350,000 cy
6. Overburden/waste description:

This area has already had nearly all of the overburden removed. Waste from clay mining is composed of clays, limestones, and quartzites. Waste generated from the crushing operation is comprised of sandy/silty material too fine to be included in any of the saleable aggregate materials, but has been certified as a sandy loam. This will be stockpiled for future use as topsoil in reclamation and for fill.

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106.5 – Existing soil types, location of plant growth material

The west area. The soil in this area is comprised of decomposed clays and shales with a fair amount of sandy, silty material mixed in. There is also a large percentage of large rocks (limestones and quartzites) intermixed into the soil.

- a. Depth of soil material: along the ridge on which the mine is situated the soil depth is only 6" to 8".
  - a 1. The volume available for stockpiling is about 3,000 cy.
  - a 2. The texture of the soil is clayey, dry, and crumbly with some sand.
  - a 3. The pH is generally 8.0 to 8.5.
- b. A sample of the soil will be sent out for analysis, and results forwarded to the Division.

The east area. The little soil left in this area is composed of sandy, silty material with a large percentage of small to large rocks intermixed into the soil.

- a. Depth of soil material: in the area in which any soil material is left in place the soil depth is about 12".
  - a 1. The volume available for stockpiling is about 0 cy.
  - a 2. The texture of the soil is rubblely and sandy.
  - a 3. The pH is generally 8.0 to 8.5.
- b. A sample of this soil will not be sent out for analysis.

106.6 – Plan for protecting and redepositing existing soils

The west area.

|   |                |
|---|----------------|
| Thickness of soil material:                 | ≈ 6 – 8 inches |
| Area from which the soil can be stockpiled: | 3.0 acres      |
| Volume of soil to be stockpiled:            | 3,000 cy       |

The west mining area is comprised of old mining cuts and stockpile pads. The area proposed for mining is a peninsula between the old east cut and south cut. When the east, south, and middle cuts and the west stockpile were made no effort was taken to stockpile and store topsoil removed from these areas. This is the reason there is an area of only 3 acres from which topsoil can be stockpiled. Although only a small amount of native topsoil will be available for reclamation, there will be an ample supply of sandy loam that can be used for topsoil.

After the soil is stockpiled the stockpile will be seeded with a quick growing seed mixture appropriate for the soil and climate to protect the soil in the stockpile from eroding. The stockpiles will be fairly low and long to maximize surface area versus volume.

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The east area.

Thickness of soil material:  $\approx$  12 inches  
Area from which the soil can be stockpiled: 1.0 acre  
Volume of soil to be stockpiled: 0 cy

Since the nature of the little remaining topsoil in this area is very, very rubbly, and it would be impossible to replace this rocky material on reclaimed areas while keeping the plant growth medium material at the surface. No topsoil will be stockpiled in this area. Instead, the sandy loam from the crushing operation will be used as "topsoil" for this area

106.7 – Vegetation Survey

Dr. Alan Stevens from Willow Creek Seed Co. has been contracted to perform a vegetation survey of the mining area. He anticipates performing the survey in March. The results of this survey will be forwarded to the division.

106.8 – Depth to groundwater, overburden material, and geologic setting.

The depth to groundwater in this area is unknown. No wells have been drilled.

*Geology of the Formation.*

The west area: This is an area of nearly vertical to vertical veins of varying layers of clay/shale, limestones, and quartzites. These deposits originate from the Mississippian period during the Carboniferous. They were deposited in an oceanic environment during various periods of intrusion and regression of the sea. When the Traverse Mountains, on which Camp Williams sits, intruded into the area these flat lying beds were pushed southward causing severe folding, ultimately leaving the beds nearly vertical in this area. Since these deposits are at the surface, the only overburden will be the top 5 feet or so of material which has been degraded by being so close to the surface.

The east area: This is an area of nearly vertical to vertical veins of varying layers of clay/shale, limestones, and quartzites. These deposits originate from the Mississippian period during the Carboniferous. They were deposited in an oceanic environment during various periods of intrusion and regression of the sea. When the Traverse Mountains, on which Camp Williams sits, intruded into the area these flat lying beds were pushed southward causing severe folding, ultimately leaving the beds nearly vertical in this area. At some time, probably during the Tertiary Period, glaciers in the Oquirrh Mountains to the west began to melt causing a large influx of water carrying debris from the Oquirrh Mountains into this area. The debris was deposited on the south and east sides of the hill in this area leaving a large deposit of granitic alluvium. This alluvium of aggregate materials could be considered as overburden to the clay, but is being processed into different aggregate materials and sold. There is no overburden on top of the sand and gravel.

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106.9 – Location and size of ore and waste stockpiles, tailings, and treatment ponds and discharges

The west area: See map # SF-1 The clay stockpile is to the west of the mining area, and has been permitted for use since at least 1987. The size of this stockpile (2.75 acres) has been expanded slightly by about 0.5 acres. The waste piles (waste dump D, 4.0 acres) from this mining area will be against the north wall of the old East Cut. The East Cut is an old pre-law mining cut that was left in poor condition. The waste will be pushed up against the north wall to about the same elevation as the original ground level. The waste pile will then be sloped to the south down to the floor of the pit and left at a 3:1 slope. There will be no tailings created, nor treatment ponds nor discharges.

The east area: See map # SF-1 The location of the gravel stockpiles will be to the east and south of the crusher. Any waste generated from clay mining will be deposited back into areas which have been mined out from previous minings (dumps B & C), until grade has been reached. It is anticipated that dump C will be filled and reclaimed by the spring of 2004. There is a large existing waste pile (waste dump A) which will not be added to, and will be pushed northward into the area of waste dump B beginning the summer of 2005.

IV RULE R647-4-107 – OPERATION PRACTICES

107.3 – Erosion Control & Sediment Control

The west area: (See map BM-1) Small berms will be constructed along the downhill side of both the upper and lower east-west roads. These small berms will act as a barrier to slow the flow of any runoff to prevent any channeling as the water passes southward over the dryfarm to the south. The only runoff that will reach the east-west roads will be from the roads themselves. Any water from the stockpile pad will remain on the stockpile pad as it slopes inward, and has a 2' berm erected along the west, east, and south sides. All of the areas of mining and waste dumps are inward sloping. The previously disturbed and unreclaimed area in the west has no exit for water at all. The mining area and waste dump area will channel water to the bottom of the old south and east cuts. This water will be detained by berms created at the east end of these cuts. This water will then be absorbed into the ground.

The east area: (See map BM-1) In this area 60 acres of the area will flow and drain into the old Lehi cut or the depression created by the gravel operation. This water will be unable to escape the property. A 4' berm will be constructed along the south side of the gravel stockpile pad area. The purpose of this berm is to detain the water and allow the silts and sands to precipitate out before the water either seeps into the sandy surface, or flows to the east end of the berm and into the drainage to the south. The berm will also prevent channeling of the south slope of the stockpile area.

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## V RULE R647-4-109 – IMPACT ASSESSMENT

### 109.1 – Impacts to surface & groundwater systems.

No impact on ground water or surface water is anticipated. We will not impinge on groundwater as the mine is not anticipated to be mined to that depth.

The west area: The mine in the west area is located on the top of a small hill, and surrounded by a dry wheat farm. The dry farm is used to provide stability to the topsoil, and reduce erosion. There are no streams or waterways that traverse the mining area. There is an ephemeral stream which runs west to east more than 500 feet to the south of the mining area. This stream was impounded at some time in the past by a dike (located on map BM-2) which provided access to the property to the south. No one knows who constructed the dam or when. The dam has, in effect, acted to stop the flow in this stream. Interpace will construct two foot high berms along the south side of both the upper and lower roads to slow any runoff from the hill in the mining area. These berms will slow the velocity of any runoff. This will prevent any channeling by the runoff when the water passes over the dry farmland to the south of the mining area. Also, most of the south side of the hill will remain vegetated and undisturbed; this will also act as an erosion control method.

At the east, downhill end of the area to be mined (between the old east cut and south cut) there will be a large berm constructed to control any waterflow downhill in the mining area. This will control any sediment and erosion from the actual mining area.

The east area: There is a small ephemeral stream which runs west to east on the south side of the mining area. This is a continuation of the stream from the west which was dammed by the dike mentioned above. The stream channel is grassed and shows no signs of periodic water erosion or even water flow. A 4 foot berm will be constructed on the south side of the stockpile pad area to prevent any erosion and sediment from reaching this ephemeral stream. The berm will slow down the flow of water and allow silts and sands to settle out before the water reaches the ephemeral streambed.

### 109.2 – Wildlife habitat and endangered species

The impact this mine will have on wildlife and wildlife habitat is minimal. The only large wildlife sighted in this area are mule deer and coyotes. Any large wildlife seems to come down from the hills from the north and west out of Camp Williams. A few animals are sighted during winter in the mining area, especially in the old mining cuts. As development to the east and south of the mining area moves closer, it appears that the wildlife is transiting this area less and less.

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No threatened or endangered species reside in this area, so no special measures need be taken to minimize the impact on them. As these areas are reclaimed, the grasses used will help provide feed for the large animals. The operation will be conducted so as to minimize the impact on all species in the area.

#### 109.3 – Existing soil and plant resources

The west area: The impact on existing soil and plant resources in the west area are those created by the stripping and stockpiling of topsoil. The process terminates the surface vegetation growth and renders much of the microscopic soil biota impaired. To offset this problem as much as possible, the stockpiles will be fairly low and long to maximize surface area versus volume and they will be vegetated with a sturdy and substantial plant community composed of a mix of vegetation designed for this soil and environment. Although the topsoil piles won't be farmed as such the presence of active plant growth on the piles will keep the topsoil alive until it's used in reclamation.

No riparian or wetlands exist within the revised permit area, so none will be affected by the expanded mining operation. No threatened or endangered plant species exist within the expanded mining permit area.

The east area: The east area has already been stripped of almost all topsoil and plants. It is not anticipated that any undisturbed areas will be disturbed; therefore, there is no plan for stockpiling any original topsoil in this area. However, the sandy loam, a resultant byproduct of the crushing operation, is an excellent plant growth medium, although with little organic material.

#### 109.4 – Slope stability, erosion control, air quality, and public health and safety

This is private ground with no public access. All appropriate measures are taken to ensure that the public cannot enter the property. A gate has been placed across the road, and large boulders set for a distance to the sides of the gate to keep vehicles from running around the gate. Large boulders have been placed in the roadway leading to Interstate Brick's clay mines to the south, and the road to the west has been cut off with a berm. The gully that runs west to east to the south of the mining area acts as a barrier to entrance to the property. The National Guard does have an interest in transiting across the property to enter Camp Williams to the west of the mining area. The berm to the west is removed while they are using the road, but when they are done the berm is replaced. No trespassing signs are very abundant in the area to attempt to keep the public out. Since these measures have been taken it appears that there is much less illegal entry into the mining area.

The west area: The area to be mined, stands at a slope of 10° on natural slopes and is vegetated at that slope. The slopes we create will be steeper than that at approximately an 18° angle, which is a 3 horizontal : 1 vertical so that topsoil can be placed on them prior to revegetating. The old mining areas have

highwalls which lay nearly vertical. As the waste materials are pushed against these highwalls, the waste will be graded to a 3:1 slope also. Care will be taken to leave these slopes very rough to prevent slope erosion. In areas where the surface is composed of in-place material the east-west orientation of the veins of limestone and quartzites and shales will prevent any slope erosion in a north-south direction, but these also will be left rough. As waste is pushed against the highwall on the north it will be graded to the correct slope. Much of the waste that will go into the waste dump will be rock and shale. These will help bind the slope to prevent erosion, but the slope will be left rough, and small "berms" will be created by ripping with a tracked dozer to a depth of at least 18" across the contour to help prevent slope erosion. No air quality permits should be necessary since this material is not subject to wind erosion. During mining a water truck will be available to wet the roads to keep any dust from becoming airborne.

The high-walls in the active portion of the pit will be left at a slope of 45°, from year to year between mining cycles as the mining progresses. Given the ability of this material to stand unaided at this angle in a highwall this will not be a problem. Any slope that is not part of the active mining will be graded down to a 18° to 20° slope to make it feasible to place topsoil or sandy loam as a first step in reclamation.

During reclamation, after the topsoil is placed on the slopes, the entire area will be ripped with a dozer to a depth of at least 18 inches and an interval of 3 feet on contour to assure the stability of the site and to improve water retention. The area will be left very rough also.

The east area: This area has already been disturbed. Most of the area of gravel mining lies at a slope of about 10°. In the area above the clay pit the slope lies at an angle of about 22°. During mining and reclamation no slope will be left steeper than 18° or 3:1. The slope above the clay pit will also be brought to the same slope. As the higher portions of the area are removed of aggregate materials they will be left at the appropriate slope mentioned above. The nature of the aggregate material lends itself to slope stability. As about 100' horizontal is brought to the appropriate grade it will be reclaimed, thereby reducing slopewash downward from the top portions of the mine, and to reduce the amount of money spent at any one time on reclamation. During reclamation, the entire area will be ripped with a dozer to a depth of at least 18 inches and an interval of 3 feet on contour to assure the stability of the site and to improve water retention. The area will be left very rough also.

The third party contractor who has leased this area from Interpace and operates the crushing plant has obtained an air quality permit, and complies with all clean air regulations. A water truck is on hand at all times to keep dust to a minimum.

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## VI RULE R647-4-110 – RECLAMATION PLAN

### 110.1 – Current land use and post-mining land use

The current or premining use of the land (other than mining) is dry farming. The intended use of the land after mining operations are completed is the same, although this end use will probably change. As development moves in from the east Interpace will probably develop this land in parcels as mining moves westward, always leaving a buffer zone between the nearest development and the active mining areas.

### 110.2 – Reclamation of roads, highwalls, slopes, leach pads, dumps, etc...

- A. Roads. Various roads are present in the mine area. The road enters at the southeast corner then runs westward and splits into an upper east-west road, a lower east-west road, and a southward road leading to the Allred property and Interstate's clay pit. The upper east-west road and connecting roads will be reclaimed by using a tracked hoe to bring the top edge down and to bring the berm on the lower edge back on to the road. The tracked hoe will rough up the surface of the road prior to reseeding at the same time (as recommended by the Division). The lower east-west road and the southward road will be left in place and not reclaimed. The southward road is used by the landowner to the south and Interstate Brick to access their property. The lower east-west road will also be left in place and not reclaimed. It will be used as access to the property to the west that is used as a dry farm, and access for the National Guard to Camp Williams.

The road which runs north-south along the east edge of the property will be reclaimed by scarifying the ground with a grader and seeded. This road lies within the right-of-way of the first Kern River pipeline. It will not be wise, and probably illegal, to try to rip the ground within the right-of-way out of fear that the pipeline will be ruptured.

- B. Highwalls. It is not anticipated that any highwalls will be left in any disturbed area in either the east or west mining areas.
- C. Slopes. All slopes will be graded to no more than 18° to 20°. In the west mining area the slopes will be retopsoiled and revegetated with a mix of plant species tailored for this area and climate. This will be somewhat steeper than the natural slope angle in this area, but will bring down the extreme highwalls existing in the old pre-law mining cuts. In the east mining area it will be determined, at the time of reclamation, whether the sandy loam will be applied as a topsoil. It is anticipated that about half of the east area will need to have the sandy loam topsoil applied since there will be waste piles to be covered and areas of clay mining. (see map RT-1) Any area needing this topsoil will be covered to a depth of 8". About half of the east area is already comprised of this sandy loam, therefore not needing a new cover of this material. All slopes will be ripped on contour

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by tracked dozer to a depth of 18" at a 3' interval to improve water retention and to loosen the substrate.

- D. Mine material processing area. The area on which the crusher and gravel stockpiles sit will be a relatively flat area of about 12 acres. These areas will be ripped by a tracked dozer to a depth of 24" on an interval of 3" to loosen the substrate and to improve water retention. All of this area is comprised of the sandy loam, so none of this area will need new loam applied. This area will be left relatively rough.
- E. Waste piles. About 20,000 cy of overburden / waste dump "A" (RT-1 Middle 26 acres Orange) will be moved northward by tracked hoe and dump trucks into dump "B" (RT-1 Middle 26 acres Red Outline) to fill in any old clay mine cuts, and to move the south base of this waste dump northward. This will allow the south slope of this waste dump to be brought to a slope no steeper than 3:1. The remainder of waste dump "A" will be pushed to the north by tracked dozer to lower the height of this waste dump and bring its slopes to no more than 3:1. These two dumps will be covered with the sandy loam topsoil to a depth of 8", and then ripped on contour by tracked dozer to a depth of 18' at a 3' interval.

Waste dump "C" (RT-1 Middle 36 acres Blue Outline) will be filled only to the point that the final grade is reached, and then will be topsoiled with the sandy loam discussed previously. It will be covered with topsoil to a depth of 8", and then ripped by tracked dozer on contour to a depth of 18" at a 3' interval. This area will be left very rough to improve water retention and to minimize erosion due to slope wash.

Waste dump "D" (RT-1 West Mining Area Purple Outline) will be sloped no steeper than 3:1. The height of the pile will begin on the north side at about the original ground elevation before the old east cut was made years ago. The pile will be sloped southward to the bottom of the new pit at an angle no steeper than 18°. This will then have topsoil which has been removed and stockpiled from this area reapplied to a depth of 8". In the event that there is not enough original topsoil, the sandy loam will be used to cover the deficit. After the topsoil is redistributed, the area will be ripped by tracked dozer to a depth of 18" by tracked dozer on contour at an interval of 3' to improve water retention and reduce erosion due to slope wash.

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- F. Stockpile pad (RT-1 West Mining Area Orange Hatch) and topsoil pad (RT-1 West Mining Area Red Hatch) in west area. These two areas comprise approximately 4.25 acres. The topsoil pad, when emptied, will be left at the original contour. This area will be left with its topsoil in place. It will then be ripped on contour to a depth of 18" at a 3' interval by tracked dozer to improve water retention and to prevent any slope wash. The stockpile pad will have its steeper slopes located on the east and south sides pulled back by tracked hoe to achieve the appropriate slope, no greater than 3:1. The area will then be smoothed by tracked dozer. Topsoil or sandy loam will be applied to a depth of 8", and then ripped by tracked dozer to a depth of 24" at a 3' interval to improve water retention and to loosen the substrate.

#### 110.3 – Surface Facilities to be left

The crusher and screens are portable and will be removed by the third party owner when the gravel operation is complete. This will include the "crater" in which the fuel tank will be set. The scales and scale house located on the entrance road are owned and operated by a third party. They will be removed from site by their owner. It is not anticipated that any surface facilities will be left on site.

#### 110.4 – Treatment, location, and disposition of deleterious materials

Other than diesel fuel no deleterious materials will be used or brought onto the site, so there will be none to require disposal. The fuel tank will be owned by a local fuel distributor. When gravel operations are completed the owner of the tank will remove the fuel tank and the rubber liner.

#### 110.5 – Revegetation planting program and topsoil distribution

##### A. Soil material replacement.

The west area: The total area to be reclaimed is about 24 23.5 acres. The lower east-west road comprising about 1.75 acres will not be reclaimed. Reclaiming with eight to ten inches of topsoil will require a total of about 8,500 cy of topsoil. There will only be about 3,000 cy of original topsoil available to be stockpiled. All of this topsoil will be used in reclamation, the balance of the topsoil needed will come from the sandy loam generated as a processed waste in the crushing operation. There will be an ample supply of this material available for reclamation. The topsoil will be transported by dump truck and placed on the slopes with tracked crawlers. Seeding will be by broadcast. Interpace will request the assistance and recommendations from the Division as to the amount of manure at the time of reclamation.

The east area: The total area to be reclaimed is about 80 acres. Since a large portion of this area is composed of the sandy loam material, only 36 acres of this area will require topsoil at the time of reclamation.

Reclaiming with eight inches of topsoil will require a total of about 13,000 cy of topsoil. No original topsoil is left to be used in reclamation. The topsoil used will come from the sandy loam generated as a processed waste in the crushing operation. There will be an ample supply of this material available for reclamation. In fact, there are already approximately 50,000 cy of this material already processed and on site. The topsoil will be transported by dump truck and placed on the slopes with tracked crawlers. Seeding will be by broadcast. Interpace will request the assistance and recommendations from the Division as to the amount of manure at the time of reclamation.

- B. Seed bed preparation. The substrate will be graded to the proper slope to insure proper drainage. Topsoil will then be laid down; transported to the slope by dump truck and then spread to the proper depth by tracked crawler. Then the area will then be "ripped" to a depth of about 18", 24" in tightly compacted areas, by tracked crawler to loosen up the substrate and to maximize water retention.

C. Seed mixtures

Description of seed mixture: The following seed mixture will be used, or any other that the Division recommends.

| Percentage | Species Name                  | Common name                  |
|------------|-------------------------------|------------------------------|
| 4.6        | Agropyron cristatum 'ephrain' | 'Ephraim' Crested wheatgrass |
| 9.2        | Agropyron elongatum           | Tall wheatgrass              |
| 18.4       | Agropyron spicatum            | Bluebunch wheatgrass         |
| 4.6        | Dctylis glomerata 'piute'     | 'Piute' orchard grass        |
| 18.4       | Elymus cinerus 'magnar'       | 'Magnar Basin Wildrye        |
| 4.6        | Medicago sativa               | Ladac Alfalfa                |
| 4.6        | Melilotus officinalis         | Yellow sweetclover           |
| 4.6        | Penstemon palmerii            | Palmer pentsemon             |
| 13.8       | Sanguisorba minor             | Small burnet                 |
| 0.9        | Artemisia tridentata vaseyana | Mountain big sagebrush       |
| 2.3        | Chrysothamnus nauseosus       | Rubber Rabbitbrush           |
| 4.6        | Kochia prostrata              | Forage kochia                |
| 9.2        | Purshia tridentata            | Bitterbrush                  |

- D. Seeding Method. The application rate will be 10.85 pounds per acre, and will be planted with no cover crop. The seed will be applied by the broadcasting method. This will be done in the fall of the year just prior to winter freezes.

- E. Fertilization. All areas using the sandy loam as topsoil will require fertilizer prior to seeding. The fertilizer will be in the form of composted manure. The composted manure will be spread across the surface by

tractor pulled manure spreader at a rate of 9 tons per acre. Any additional chemical fertilizers that may be found necessary by the Division will be used also. The Division's assistance will be utilized to determine the need and composition of the fertilizer.

## VII RULE R647-4-111 – RECLAMATION PRACTICES

### 111.2 – Reclamation of Natural Channels

The dike which blocks off the ephemeral drainage through this area will not be removed. The dike has been here for many years and aids in preventing erosion downstream. It is very possible that the dike could have been constructed in years past as a retention basin to prevent downstream erosion, not one knows when or why the dike was built. This drainage has been blocked off downstream from Interpace's property, so reconstructing the drainage in this location would not restore the entire drainage. Since the future use of this property will probably be for residential development, it would not be desirable to remove the dike to restore the drainage, and then have to reconstruct the dike to constrain any water originating from the property from escaping the property.

## VIII RULE R647-4-112 – VARIANCE

No variance is being requested at this time

## IX RULE R647-4-113 – SURETY

The total estimate for surety is \$448,462. The details for the surety calculation are found in Appendix 1.

## X PERMIT FEE [Mined Land Reclamation Act 40-8-7(i)]

Enclosed is a check in the amount of \$500.00.

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XI SIGNATURE REQUIREMENT

I hereby certify that the foregoing is true and correct. I also certify that I am duly authorized to bind the company/corporation to this notice.



Charles C. Tabaracci  
Vice President, Finance

Date: 2/4/04

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**Appendix 1****East 40 44 Acres in East Mining Area**

|     |  |            |                   |                 |                     |   |
|-----|--|------------|-------------------|-----------------|---------------------|---|
| 1)  | Cleanup and removal of structures                                |            |                   |                 | \$                  | - |
|     | Will be removed by third party owner                             |            |                   |                 |                     |   |
| 2)  | Backfilling, grading, and contouring                             |            |                   |                 |                     |   |
|     | North wall of Lehi cut (push southward 100')                     |            |                   |                 |                     |   |
|     | D8 Cat   | 2 acres @  | \$ 9,000.00 /acre | \$ 18,000.00    |                     |   |
|     | East wall of gravel pit (push westward 50')                      |            |                   |                 |                     |   |
|     | D8 Cat   | 3 acres @  | \$ 3,000.00 /acre | <u>9,000.00</u> | \$ 27,000.00        |   |
| 3)  | Soil material redistribution and stabilization                   |            |                   |                 |                     |   |
|     | none required  | - hours @  | 215.00 /hr        | -               |                     |   |
|     | none required  | - hours @  | 120.00 /hr        | -               |                     | - |
| 4)  | Revegetation (preparation, seeding, and mulching)                |            |                   |                 |                     |   |
|     | Seeding  | 44 acres @ | 240.00 /acre      | 10,560.00       |                     |   |
|     | Spreading of composted manure and straw                          | 44 acres @ | 320.00 /acre      | 14,080.00       |                     |   |
|     | Manual labor   | 40 hours @ | 15.00 /hr         | <u>600.00</u>   | 25,240.00           |   |
| 5)  | Safety gates, berms, barriers, signs, etc...                     |            |                   |                 |                     |   |
|     | D8 Cat   | 20 hours @ | 225.00 /hr        | <u>4,500.00</u> | 4,500.00            |   |
|     | (gates and signs are already in place)                           |            |                   |                 |                     |   |
| 6)  | Demolition, removal, and grading of facilities areas             |            |                   |                 |                     | - |
|     | All facilities will be portable and removed by third party owner |            |                   |                 |                     |   |
| 7)  | Regrading and ripping of waste dump tops and slopes              |            |                   |                 |                     |   |
|     | D8 Cat   | 5 acres @  | 1,500.00 /acre    | <u>7,500.00</u> | 7,500.00            |   |
| 8)  | Regrading and ripping of tightly compacted areas                 |            |                   |                 |                     |   |
|     | 135H motor grader (Pipeline area)                                | 1 acres @  | 700.00 /acre      | 700.00          |                     |   |
|     | D8 Cat   | 43 acres @ | 225.00 /acre      | <u>9,675.00</u> | 10,375.00           |   |
| 9)  | Mulching, fertilizing, and seeding the affected areas            |            |                   |                 |                     |   |
|     | (See number 4 above)   |            |                   |                 |                     |   |
| 10) | General site cleanup and trash removal                           |            |                   |                 |                     |   |
|     | Manual labor   | 44 acres @ | 15.00 /acre       | <u>660.00</u>   | 660.00              |   |
| 11) | Removal and disposal of hazardous materials                      |            |                   |                 |                     | - |
|     | To be removed by third party owner                               |            |                   |                 |                     |   |
| 12) | Equipment mobilization   |            |                   |                 |                     |   |
|     | 135H motor grader  | 2 moves @  | 300.00 /move      | 600.00          |                     |   |
|     | D8 Cat   | 2 moves @  | 400.00 /move      | <u>800.00</u>   | 1,400.00            |   |
| 13) | Supervision during reclamation                                   |            |                   |                 |                     |   |
|     | Total of all other items times factor of                         |            | 15%               |                 | <u>11,291.00</u>    |   |
|     | Total Estimate for surety  |            |                   |                 | <u>\$ 87,966.00</u> |   |

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Middle 36 Acres in East Mining Area

|  |                |                   |              |               |   |
|--|----------------|-------------------|--------------|---------------|---|
| 1) Cleanup and removal of structures   |                |                   |              | \$            | - |
| none will exist  |                |                   |              |               |   |
| 2) Backfilling, grading, and contouring  |                |                   |              |               |   |
| Waste Dump A   |                |                   |              |               |   |
| D8 Cat   | 5 acres @      | \$ 7,200.00 /acre | \$ 36,000.00 |               |   |
| Waste Dump B   |                |                   |              |               |   |
| D8 Cat   | 5 acres @      | \$ 3,000.00 /acre | 15,000.00    |               |   |
| Waste dump C   |                |                   |              |               |   |
| D8 Cat   | 3 acres @      | 3,000.00 /acre    | 9,000.00     |               |   |
| North mountain Push southward 100'   |                |                   |              |               |   |
| D8 Cat   | 3 acres @      | 12,000.00 /acre   | 36,000.00    |               |   |
| Slope south of waste dump A  |                |                   |              |               |   |
| D300E Cat articulated truck  | 20,000 yards @ | 1.75 /yd          | 35,000.00    |               |   |
| 320 Cat tracked hoe  |                |                   |              |               |   |
| D8 Cat to bring to 3:1   | 1.75 acres @   | 3,000.00 /acre    | 5,250.00     |               |   |
| miscellaneous  |                |                   |              |               |   |
| D8 Cat   | 40 hours @     | 225.00 /hr        | 9,000.00     | \$ 145,250.00 |   |
| 3) Soil material redistribution and stabilization (loaded by loader into articulated truck, spread by dozer) |                |                   |              |               |   |
| D300E Cat articulated truck  |                |                   |              |               |   |
| 938 G Cat wheeled loader   |                |                   |              |               |   |
| D8 Cat   | 13,000 yards @ | 4.00 /yd          | 52,000.00    | 52,000.00     |   |
| 4) Revegetation (preparation, seeding, and mulching)   |                |                   |              |               |   |
| Seeding  | 36 acres @     | 240.00 /acre      | 8,640.00     |               |   |
| Spreading of composted manure and straw  | 36 acres @     | 320.00 /acre      | 11,520.00    |               |   |
| Manual labor   | 40 hours @     | 15.00 /hr         | 600.00       | 20,760.00     |   |
| 5) Safety gates, berms, barriers, signs, etc...  |                |                   |              |               |   |
| D8 Cat   | 10 hours @     | 225.00 /hr        | 2,250.00     | 2,250.00      |   |
| 6) Demolition, removal, and grading of facilities areas  |                |                   |              |               | - |
| not applicable   |                |                   |              |               |   |
| 7) Regrading and ripping of waste dump tops and slopes   |                |                   |              |               |   |
| D8 Cat   | 13 acres @     | 225.00 /acre      | 2,925.00     | 2,925.00      |   |
| 8) Regrading and ripping of tightly compacted areas  |                |                   |              |               |   |
| D8 Cat   | 26 acres @     | 225.00 /acre      | 5,850.00     | 5,850.00      |   |
| 9) Mulching, fertilizing, and seeding the affected areas   |                |                   |              |               |   |
| (See number 4 above)   |                |                   |              |               |   |
| 10) General site cleanup and trash removal   |                |                   |              |               |   |
| Manual labor   | 36 acres @     | 15.00 /acre       | 540.00       | 540.00        |   |
| 11) Removal and disposal of hazardous materials  |                |                   |              |               | - |
| not applicable   |                |                   |              |               |   |
| 12) Equipment mobilization (from Wheeler Machinery price list)   |                |                   |              |               |   |
| D300E Cat articulated truck (2 each)   | 4 moves @      | 300.00 /move      | 1,200.00     |               |   |
| 938 G Cat wheeled loader   | 2 moves @      | 300.00 /move      | 600.00       |               |   |
| 320 Cat tracked hoe  | 2 moves @      | 300.00 /move      | 600.00       |               |   |
| D8 Cat   | 2 moves @      | 400.00 /move      | 800.00       | 1,400.00      |   |
| 13) Supervision during reclamation   |                |                   |              |               |   |
| Total of all other items time factor of  | 15%            |                   | 34,646.00    |               |   |

Total Estimate for surety

\$ 265,621.00

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Estimate for Reclamation West Mining Area 24 Acres

|   |                 |                   |              |           |   |
|---|-----------------|-------------------|--------------|-----------|---|
| 1) Cleanup and removal of structures  |                 |                   |              | \$        | - |
| none will exist   |                 |                   |              |           |   |
| 2) Backfilling, grading, and contouring   |                 |                   |              |           |   |
| Waste Dump D  |                 |                   |              |           |   |
| D8 Cat  | 4 acres @       | \$ 575.00 /acre   | \$ 2,300.00  |           |   |
| Mining area   |                 |                   |              |           |   |
| D8 Cat  | 10 acres @      | \$ 225.00 /acre   | 2,250.00     |           |   |
| Stockpile pad   |                 |                   |              |           |   |
| 320 Cat tracked hoe   | 3.75 acres @    | \$ 715.00 /acre   | 2,681.25     |           |   |
| D8 Cat  |                 |                   |              |           |   |
| Old west cut  |                 |                   |              |           |   |
| D8 Cat  | 2.75 acres @    | \$ 5,000.00 /acre | 13,750.00    |           |   |
| Roads   |                 |                   |              |           |   |
| 320 Cat tracked hoe   | 2.9 acres @     | \$ 460.00 /acre   | 1,334.00     |           |   |
| Miscellaneous   |                 |                   |              |           |   |
| D8 Cat  | 20 hours @      | 225.00 /hr        | 4,500.00     | 26,815.25 |   |
| 3) Soil material redistribution and stabilization (hailed by trucks, placed by dozer) |                 |                   |              |           |   |
| D300E Cat articulated loader  |                 |                   |              |           |   |
| 938 G Cat wheeled loader  |                 |                   |              |           |   |
| D8 Cat  | 8,500.0 yards @ | 4.00 /yd          | 34,000.00    | 34,000.00 |   |
| 4) Revegetation (preparation, seeding, and mulching)                                  |                 |                   |              |           |   |
| Seeding   | 23.5 acres @    | 240.00 /acre      | 5,640.00     |           |   |
| Spreading of composted manure and straw   | 23.5 acres @    | 320.00 /acre      | 7,520.00     |           |   |
| Manual labor  | 23.5 hours @    | 15.00 /hr         | 352.50       | 13,512.50 |   |
| 5) Safety gates, berms, barriers, signs, etc...                                       |                 |                   |              |           |   |
| D8 Cat  | 5 hours @       | 225.00 /hr        | 1,125.00     | 1,125.00  |   |
| 6) Demolition, removal, and grading of facilities areas                               |                 |                   |              |           |   |
| not applicable  |                 |                   |              |           | - |
| 7) Regrading and ripping of waste dump tops and slopes                                |                 |                   |              |           |   |
| See #2 above  | - acres @       | - /acre           | -            | -         |   |
| 8) Regrading and ripping of tightly compacted areas                                   |                 |                   |              |           |   |
| D8 Cat  | 23.5 acres @    | 225.00 /acre      | 5,287.50     | 5,287.50  |   |
| 9) Mulching, fertilizing, and seeding the affected areas                              |                 |                   |              |           |   |
| (See number 4 above)  |                 |                   |              |           |   |
| 10) General site cleanup and trash removal  |                 |                   |              |           |   |
| Manual labor  | 24 acres @      | 15.00 /acre       | 360.00       | 360.00    |   |
| 11) Removal and disposal of hazardous materials                                       |                 |                   |              |           |   |
| not applicable  |                 |                   |              |           | - |
| 12) Equipment mobilization (from Wheeler Machinery price list)                        |                 |                   |              |           |   |
| D300E Cat articulated truck (2 each)  | 4 moves @       | 300.00 /move      | 1,200.00     |           |   |
| 938 G Cat wheeled loader  | 2 moves @       | 300.00 /move      | 600.00       |           |   |
| 320 Cat tracked hoe   | 2 moves @       | 300.00 /move      | 600.00       |           |   |
| D8 Cat  | 2 moves @       | 400.00 /move      | 800.00       | 1,400.00  |   |
| 13) Supervision during reclamation  |                 |                   |              |           |   |
| Total of all other items time factor of   | 15%             |                   | 12,375.00    |           |   |
| Total Estimate for surety   |                 |                   | \$ 94,875.25 |           |   |

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## Clinton Clay Mine Vegetative Analysis

March 13, 2003

At the Clinton Clay Mine site the dominant vegetative type is a wyoming sagebrush/ grassland. 52 vegetative samples were taken to determine the species present, the percent live cover of each species, and the frequency of each species. The data obtained is shown below. All transects were 100' line transects and data was obtained using the line intercept method. The vegetative samples were located randomly using a random number table, and all areas with vegetation were sampled. The location of each sample is shown on the topographical map that is enclosed. Vegetative samples were taken March 5, 6, and 8, 2003. The vegetative samples showed that most species were distributed throughout the site. The density and composition of species at different sample sites varied slightly. There were three species that were only found in one or two of the samples. Bitterbrush (*Purshia tridentata*) was only found in sample 34, Palmer's penstemon (*Penstemon palmeri*) was only found in samples 21 and 22, and western wheatgrass (*Agropyron smithii*) was only found in samples 49 and 50 (sample sites are shown on map).

### Grasses

| <u>Common Name</u>       | <u>Scientific Name</u>       | <u>% Live Cover</u> | <u>Frequency</u> |
|--------------------------|------------------------------|---------------------|------------------|
| Cheatgrass               | <i>Bromus tectorum</i>       | 6                   | 1.15/ft          |
| Bluebunch Wheatgrass     | <i>Agropyron spicatum</i>    | 1.8                 | 0.05/ft          |
| Sandburg's Bluegrass     | <i>Poa secunda</i>           | 1                   | 0.06/ft          |
| Crested Wheatgrass       | <i>Agropyron cristatum</i>   | 0.7                 | 0.02/ft          |
| Muttongrass              | <i>Poa fendleriana</i>       | 0.4                 | 0.02/ft          |
| Western Wheatgrass       | <i>Agropyron smithii</i>     | 0.28                | 0.02/ft          |
| Purple Threeawn          | <i>Aristida purpurea</i>     | 0.16                | 0.005/ft         |
| Intermediate Wheatgrass  | <i>Agropyron intermedium</i> | 0.11                | 0.003/ft         |
| Indian Ricegrass         | <i>Oryzopsis hymenoides</i>  | 0.1                 | 0.005/ft         |
| <b>Total for Grasses</b> |                              | <b>10.5%</b>        | <b>1.333/ft</b>  |

### Forbs

| <u>Common Name</u>    | <u>Scientific Name</u>       | <u>% Live Cover</u> | <u>Frequency</u> |
|-----------------------|------------------------------|---------------------|------------------|
| Storksbill            | <i>Erodium cicutarium</i>    | 0.6                 | 0.6/ft           |
| Common Dandelion      | <i>Taraxacum officianle</i>  | 0.1                 | 0.005/ft         |
| Louisiana Wormwood    | <i>Artemisia ludoviciana</i> | 0.03                | 0.004/ft         |
| Foothills Death Camas | <i>Zigadenus paniculatus</i> | 0.02                | 0.001/ft         |

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|                    |                          |       |           |
|--------------------|--------------------------|-------|-----------|
| Palmer's Penstemon | <i>Penstemon palmeri</i> | 0.01  | 0.001/ft  |
| Russian-thistle    | <i>Salsola pestifer</i>  | 0.01  | 0.0003/ft |
| Total for Forbs    |                          | 0.77% | 0.6113/ft |

### Shrubs


| <u>Common Name</u> | <u>Scientific Name</u>                   | <u>% Live Cover</u> | <u>Frequency</u> |
|--------------------|--|---------------------|------------------|
| Wyoming Sagebrush  | <i>Artemisia tridentata wyomingensis</i> | 16.3                | 0.13/ft          |
| Rubber Rabbitbrush | <i>Chrysothamnus nauseosus</i>           | 6.1                 | 0.05/ft          |
| Broom Snakeweed    | <i>Gutierrezia sarothrae</i>             | 1                   | 0.03/ft          |
| Bitterbrush        | <i>Purshia tridentata</i>                | 0.35                | 0.0006/ft        |
| Viscid Rabbitbrush | <i>Chrysothamnus viscidiflorus</i>       | 0.2                 | 0.004/ft         |
| Gray Horsebrush    | <i>Tetradymia canescens</i>              | 0.18                | 0.004/ft         |
| Total for Shrubs   |  | 24.13%              | 0.2186/ft        |

Total Cover = 35.45%

Frequency = 2.16 plants/ft

If you have any further questions please feel free to write or call me.

Willow Creek Seed  
Allan R. Stevens, Ph.D.  
593 E Canyon Rd.  
Ephraim, UT 84627  
(435) 283-7521 (work)  
(435) 283-5100 (home)  
(435) 283-7501 (fax)  
allan.stevens@snow.edu

  
(please note address change)

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DIV. OIL GAS & MINING

# Utah State UNIVERSITY

## USU ANALYTICAL LABORATORIES

Ag Science 166  
4830 Old Main Hill  
Logan UT 84322-4830  
Telephone (435) 797-2217  
Fax (435) 797-2117

18 APRIL 2003

AARON HANCOCK  
INTERPACE INDUSTRIES INC  
PO BOX 12118  
OGDEN UT 84404

SOIL SAMPLES RECEIVED: 03/24/03

| USU # | IDENT | pH  | Electrical<br>Conductivity<br>dS/m | SAR  | Olsen NaHCO <sub>3</sub> -extract-<br>Phosphorus<br>mg/kg | Potassium<br>mg/kg | Walkley-Black<br>Organic Matter<br>-----% |
|-------|-------|-----|------------------------------------|------|---|--------------------|---|
| 1304  | W-1   | 7.8 | 1.0                                | 1.86 | 2.7   | 73                 | 2.1                                       |
| 1305  | W-2   | 7.3 | 0.8                                | 3.65 | 5.3   | 175                | 2.1                                       |
| 1306  | W-3   | 7.3 | 0.8                                | 1.03 | 13.6  | 257                | 4.2                                       |
| 1307  | W-4   | 7.7 | 0.9                                | 1.13 | 9.8   | 228                | 2.7                                       |
| 1308  | W-5   | 7.9 | 0.8                                | 1.11 | 58  | >400               | 3.4                                       |
| 1309  | SL-1  | 8.1 | 0.7                                | 2.47 | 2.2   | 146                | 0.2                                       |
| 1310  | SP-1  | 7.9 | 1.0                                | 2.23 | 5.2   | 152                | 1.6                                       |

Form MR-REV  
Appendix 2

| USU # | IDENT | Leco<br>Total Nitrogen<br>-----% | Cation Exchange<br>Capacity<br>meq/100g | Sand<br>-----% | Silt<br>-----% | Clay<br>-----% | Texture    |
|-------|-------|----------------------------------|---|----------------|----------------|----------------|------------|
| 1304  | W-1   | 0.18                             | 17.9                                    | 27             | 44             | 29             | Clay Loam  |
| 1305  | W-2   | 0.15                             | 18.9                                    | 43             | 35             | 22             | Loam       |
| 1306  | W-3   | 0.23                             | 16.7                                    | 43             | 41             | 16             | Loam       |
| 1307  | W-4   | 0.18                             | 21.0                                    | 32             | 46             | 22             | Loam       |
| 1308  | W-5   | 0.19                             | 15.4                                    | 39             | 48             | 13             | Loam       |
| 1309  | SL-1  | <0.01                            | 12.9                                    | 72             | 19             | 9              | Sandy Loam |
| 1310  | SP-1  | 0.11                             | 15.0                                    | 28             | 49             | 23             | Loam       |

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